Erratum

Radiative Corrections and the Sliding Singlet Mechanism for Light Doublet Higgs Fields

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Equation (13) in the paper should read

$$\delta m_H^2 - \delta m_{\bar{H}}^2 = 24e^4 (\Delta m_A^2)^2 \int_0^1 dx \, x(1-x) \cdot \int \frac{d^4 p}{(2\pi)^4} \frac{1}{(p+q)^2 + m_H^2} \int \frac{d^4 k}{(2\pi)^4} \frac{1}{[k^2 + p^2 \cdot x(1-x) + m_A^2]^4} \quad (13)$$

and (14) should be corrected to

$$V_1 \sim (\Delta m_A^2)^2 \int_0^\infty p^2 dp^2 [f(p^2, m_H^2) - f(p^2, \mu^2)]$$

$$\frac{\partial}{\partial p^2} \left\{ \frac{1}{p \sqrt{p^2 + 4m_A^2}} \ln \frac{\sqrt{p^2 + 4m_A^2} + p}{\sqrt{p^2 + 4m_A^2} - p} \right\}. \quad (14)$$

The rough estimates given after (15) apply for $\mu^2 = 0$ (m_H^2). More precise we have $\frac{\partial V}{\partial m_H^2} \sim \frac{(\Delta M^2)^2}{M_A^2} \ln \frac{m_H^2}{m_A^2}$ for $m_H/m_A \ll 1$ and $\sim \frac{(\Delta M^2)^2}{M_H^2} \log \frac{m_A^2}{m_H^2}$ for $m_H/m_A \gg 1$. However, only the powers of m_H^2 enter the discussion in the first part.

Radiative corrections are irrelevant for $\Delta m_A^2 \ll m_{\text{weak}}^2$. Inequality (8) and $\Delta m_A^2 \lesssim m_A^2$ enforce $\Delta m_A^2 \lesssim m_{\text{weak}}^2$ (mod/log) as a necessary condition for the sliding singlet mechanism.